MCV 4U
CURVE SKETCHING

PART A:

Given function $f(x)$,
① State DOMAIN.
② Identify VA & holes in $f(x)$; use limits to evaluate behaviour.
③ State location of HA (y=b) or OA (use long division to find y=mx+b).
④ State location of any intercepts.

PART B:

Find critical values of $f'(x)$
① Find $f'(x) = 0$
② Find $f'(x) = dne$ (cusps)

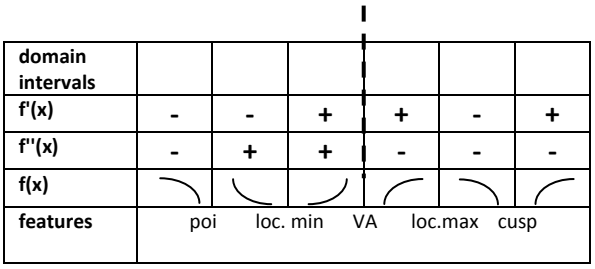
PART C:

Find critical values of $f''(x)$
① Find $f''(x) = 0$ (poi)
② Find $f''(x) = dne$

PART D:

ANALYSIS CHART:

use all **VAs & critical values (from parts B & C)**



Identify VAs, max/min and inflection points

PART E:

① Plot points (2-3 per branch) to sketch and shape curve.
② Highlight and label critical points.
③ Label intervals of concavity at bottom of sketch.

EXAMPLES: Analyze each function. Use a full page to graph the function.

① $f(x) = x^4 - 8x^2 + 3$

② $f(x) = \frac{x^2-1}{(x-2)^4}$

③ $f(x) = \frac{4x^2-4}{x^2+4}$

$f'(x) = 40x(x^2+4)^{-2}$
$f''(x) = 40(x^2+4)^{-3}(4-3x^2)$

④ $f(x) = \frac{x^2}{x^2-4x+4}$

$f'(x) = -4x(x-2)^{-3}$
$f''(x) = 4(x-2)^{-4}(2x+2)$

⑤ $f(x) = \frac{2x^3}{x^3-8}$

$f'(x) = -48x^2(x^3-8)^{-2}$
$f'(x) = 96x(x^3-8)^{-3}(2x^3+8)$